



[Translation]

PATENT APPLICATION

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[SPECIFICATION]

[Title of the Invention]

RECORDING APPARATUS FOR RESERVING TV PROGRAMS BY INTERNET DATA

[Brief description of the Drawings]

Figure 1 is a schematic construction view of a recording apparatus for reserving TV programs in accordance with a conventional art;

Figure 2 is a signal waveform on the basis of a vertical retrace line interval of a composite video signal, wherein (a) is an odd field signal waveform and (b) is an even field signal waveform; and

Figure 3 is a construction view of a recording apparatus for reserving TV programs using Internet data in accordance with the present invention.

**** Explanation for the major reference numerals ****

20, 160: tuner	30, 170: Y/C unit
40: data slicer	50: decoder
60, 150: memory	70, 180: recorder
80, 140: key input unit	90, 190: micom
100: modem	110: video memory
120: RAM DAC	125: monitor
130: NTSC encoder	135: TV
155: timer	

[Detailed description of the invention]

[Object of the invention]

[Field of the invention and background art]

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The present invention relates to a recording apparatus for reserving TV programs by Internet data and, in particular, to a recording apparatus for reserving TV programs using Internet data which makes it possible to connect to a homepage of each broadcasting station via the Internet for thereby selecting a program desired to be reservedly video recorded, storing the schedule data of the selected program, and recording the corresponding program based on the stored schedule data at the start of the program.

As shown in Figure 1, a conventional recording apparatus for reserving TV programs includes: a tuner 20 for tuning and outputting a desired broadcast signal among broadcast signals received from an antenna; a Y/C signal processing unit 30 in which video signals outputted from the tuner 20 process luminance and chrominance signals; a data slicer 40 in which the video signals outputted from the tuner 20 selects a certain horizontal line designated in a vertical retrace line interval of the video signals to thereafter output the same; a decoder 50 for detecting broadcast schedule data among data included in the signals of the selected horizontal line; a memory 60 for storing the detected broadcast schedule data in accordance with the control of the micom 90; a recorder 70 for recording the signals converted by the Y/C signal processing unit 30; and a micom 90 for controlling the recording of the recorder 70 according to a user's selection of a broadcast program to be reservedly recorded program which is inputted by a key input unit 80.

A reserved video recording process according to the conventional recording apparatus for reserving TV programs constructed as described above will be described as follows.

First, a specific particular horizontal line in a vertical retrace line interval of video signals tuned and outputted by the tuner 20 is selected by the data slicer 40. In presently

transmitted video signals, there is a vertical retrace line interval, as illustrated in Figure 2, as well as an audible and visible video signal interval. Therefore, a previously designated line (the 16th line under the current KBPS standard) among horizontal lines positioned in the vertical retrace line interval is selected by the data slicer 40.

The broadcast schedule data existing in the horizontal line is detected by the decoder 50 for thereby being transmitted to the micom 90. The micom 90 reformats the data detected by the decoder 50 in a certain format(e.g., in a table format) and stores the reformatted data in the memory 60. Thereafter, a viewer selects a corresponding mode for displaying the broadcast schedule data on the screen using the key input unit 80, the micom 90 displays a broadcast schedule table of a certain format stored in the memory 60 on the screen.

Based on the thusly displayed broadcast schedule table, when the viewer selects a program that the viewer intends to reservedly video record using Up/Down keys and then selects a reserved video recording mode, the micom 90 readouts the identification code of the corresponding program stored in the memory 60.

Subsequently, if power for operation is cut off, the micom 60 controls the tuner 20 for thereby tuning in to a reserved channel, so that demodulated video signals are outputted. The thusly demodulated video signals are inputted to the Y/C signal processing unit 30 and the data slicer 40, respectively. The data slicer 40 selects a particular horizontal line as described above, and the decoder 50 extracts the broadcast program data contained in the signal of the selected horizontal line to thereafter transmit the same to the micom 90.

The micom 90 compares an On-Air ID with respect to the program presently being broadcasted from the received broadcast program data with the readout program identification code from the memory 60. If the both codes are identical, the recorder 70 is controlled to thus record the video signals converted by the Y/C signal processing unit 30.

By checking the On-Air ID which is continuously detected, if the both codes become different during the recording, the recorder 70 is controlled for thereby finishing the recording.

However, the conventional recording apparatus for reserving TV programs thusly operated has problems that there are not many products which adopt the KBPS standard, the above-described apparatuses are so expensive that the product price is increased, the reserved video recording process is very complicated, and it is difficult for the user to use.

[Technical object of the present invention]

Accordingly, it is an object of the present invention to provide a recording apparatus for reserving TV programs using Internet data by which a reserved video recording can be performed easily and at a lower cost.

[Construction of the present invention]

To achieve the above objects, in a video recording/playback apparatus, there is provided a recording apparatus for reserving TV programs using Internet data according to the present invention which includes: a communication unit for connecting to a communication network to thereafter transmit and receive data; a conversion unit for converting data received by the communication unit to signals for outputting the data on the screen of an external video display device; a storage unit for storing a program selected by a user and its broadcast schedule data which correspond to the output screen; and a micom for executing a reserved video recording of the corresponding program according to the stored data.

Hereinafter, a construction and an operation of the preferred embodiment of a recording apparatus for reserving TV programs using Internet data according to the present

invention will be described below with reference to the accompanying drawings.

Figure 3 illustrates a preferred embodiment of a recording apparatus for reserving TV programs using Internet data according to the present invention which includes a modem 100 for connecting to an external communication network to thereby transmit and receive data, a video memory 110 having a memory space corresponding to a pixel of a video text; a RAM DAC (Random Access Memory Digital/Analog Converter) 120 for continuously scanning the data stored in the video memory 110 and converting each data thusly scanned to RGB signals; an NTSC encoder 130 for converting the RGB signals outputted from the RAM DAC 120 to NTSC signal for broadcasting; a monitor 125 and a TV 135 for outputting outputting the RGB signals and the broadcast signals outputted from the RAM DAC 120 and from the NTSC encoder 130, respectively, on the screen; a key input unit 140 for selecting and inputting a broadcasting station and a program to be video reserved; a memory 150 for temporarily storing the broadcast schedule data of the selected program to be reservedly video recorded by a user; a micom 190 for controlling the recording of a recorder 180 to which external video signals having passed a tuner 160 and a Y/C unit 170 are finally inputted on the basis of the broadcast schedule data which is temporarily stored and a timer 155.

The operational sequence for the recording apparatus for reserving TV programs using Internet data according to the present invention constructed as described above will be described below in detail.

When an user selects the reserved video recording mode, the micom 190 readouts the broadcasting station data pre-stored in the memory 150, and outputs the same onto the outside screen. Then, the user selects a desired broadcasting station using the key input unit 140 and its certain key, based on the displayed data.

When a broadcast program selection order is inputted, the micom 190 stores the

channel information of a selected broadcast program in the memory 150, while executing a web browser, connecting to a server (not shown) which provides an Internet service, and then inputting a position information of the selected broadcasting station, for example, the IP address, into the web browser, thus trying to connect to the homepage of the corresponding broadcasting station. The micom 190 checks using the modem 100 whether a connection to the Internet service provider server is made or not. If the connection is not made, the connection trial is repeated until it succeeds.

When a connection to the homepage of the broadcasting station is made, data provided by the site is transmitted to the modem 100 through a communication network. The micom 190 readouts the digital data received from the modem 100 to thereby find out the format of the digital data and a relative position in a page of the data (the relative position is almost the same as a position to be displayed on the screen, except for a difference in size between the data page and an absolute screen). According to the results of the finding out, each received data is converted to a pixel data based on the output resolution and the number of colors presently set for the apparatus. Then, the micom 190 writes the pixel data in the video memory 110 by designating a memory address corresponding to a position which will be displayed on the screen.

Meanwhile, the RAM DAC 120 converts each pixel data in each address to the corresponding RGB signal, while continuously and repetitively scanning the video memory 110. The converted signal is synchronized with a pixel clock which is a synchronous clock to display signals on the screen, and then is outputted.

The above-mentioned RGB signal is a signal which can be displayed in an image right after it is applied to an external display apparatus such as the monitor 125. Based on the display information above described, the user continuously selects related links such as hypertext links for thereby arriving at subordinate sites which provide the schedule data of

the desired broadcast program.

The RGB signals outputted from the RAM DAC 120 are inputted to the NTSC encoder 130 to thus be converted to NTSC signals, one of broadcast signals. In addition, horizontal synchronizing signals and vertical synchronizing signals which are synchronized with the pixel clock are inserted into the NTSC video signals which are converted if necessary. These signals are also analog broadcast signals which are applied to the TV 135 for thereby being displayed in an image. Also, in the case that the signals are applied to the monitor 125, the user can obtain the same result. Of course, it is possible to select between the monitor 125 and the TV 135.

Next, when the user selects a program that he or she intends to reservedly video record and its broadcast schedule data (date and time) based on the display screen outputted to the monitor 125 or the TV 135, and chooses the reserved video recording completion mode, the micom 190 stores the information in the memory 150 in which the channel information is pre-stored. At this time, the user may select a plurality of programs, in which case, broadcast schedule data is stored by each program so that the programs can be distinguished from each other.

When the user finishes the operation of recording reservation, the micom 190 traces the present time continuously using the timer 155, while reading out the broadcast program and its schedule data stored in the memory 150. When the micom 190 confirms that both schedule data are identical, the recorder 180 is controlled at that time for thereby recording inputted broadcast signals.

In the embodiment above described, the connection to an external Internet network is made using the modem, while it is also possible to make a connection using an extra independent apparatus such as an Internet set-top box, etc.

[Effect of the invention]

As so far described, the recording apparatus for reserving TV programs using Internet data according to the present invention provides effects that more precise schedule data can be acquired in real time and that a reserved video recording can be implemented in an user-friendly environment with the increase of Internet users by direct connecting to a homepage of a broadcasting station for selecting a broadcast program and its schedule data and performing a reserved video recording based on the data.